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The purpose is to provide a forum for teachers, teacher-educators, educational administrators and research workers, to encourage original and critical thinking in education through presentation of novel ideas, critical appraisals of contemporary educational problems and views and experiences on improved educational practices. The contents include thought-provoking articles by distinguished educationists, challenging discussions, analysis of educational issues and problems, book reviews and other features

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TO OUR CONTRIBUTORS

JIE invites articles / papers on the impact of educational research on classroom practices and policy decisions. Specific examples where this impact is apparent may be given.

— ACADEMIC EDITOR

Smart Schools

A Case for India

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Focussed on Smart Schools, the genesis of which arises in the wake of the recent developments in information technology and communication technology, this paper spells out the author's views on reorienting schools in India to adopt suitable pedagogy for preparing children to become lifelong learners and for developing needed skills for living fully in the emerging information age. The author has stressed the use of appropriate learning technologies like computers, the internet and video-conferencing through which ability to learn can be enhanced significantly.

IN THE WAKE of the recent developments in information technology (IT) and communication technology smart schools have been opened in many countries of the world, particularly Australia, Japan, Malaysia, Singapore and the USA. Though the vision of the smart schools varies with each country their mission goals are similar. Smart schools are initiatives for making the school system relevant to the changing nature of the workplace. The distinctive features of the modern workplace are use of information and communication technology, team effort and group collaboration, which take place across time zones and international borders. With the advancements in science and technology occupations are also changing and new skills are required for performing them. Each person will continually

have to update skills to perform new tasks. Therefore, for keeping pace with the growth in knowledge and the changing nature of work one will have to be a lifelong learner. In order to become a lifelong learner an essential ability to be possessed by every citizen will be learning to learn. In this context, the focal points of school activities have to shift from the teacher to the learner. Students will assume more responsibility for their learning and may have to function as autonomous learners. In other words, emphasis of teaching-learning in schools has to shift from specific knowledge to enabling students in constructing their knowledge by asking questions, reading, exploring, daydreaming, formulating and testing hypothesis, communicating what they learn and by practising skills.

The smart schools operate on the premise that all students have the ability to learn and progress and this can be enhanced by the use of appropriate learning technologies. The computers, the Internet and other high band communication technologies such as video-conferencing are some of the learning technologies that are being used by the smart schools for fulfilling their missions. Therefore, the classrooms of smart schools are marked by computers, collaboration and constructivism. Another hallmark of the smart school is that its students in their interaction are supportive of each other instead of being competitive. This view of schooling stands in sharp contrast to the traditional role of imparting predetermined learning uniformly to each student at a common pace.

The genesis of the concept of smart schools in each country, where they have been set up, have been different. For example, the smart schools in Silicon Valley, California, USA, were an outcome of the realization by the Smart Valley, Inc. that if they did not partner with their schools their children would become their biggest export. Their children studying in schools in Silicon Valley will be unqualified for jobs in the very companies that created Silicon Valley, as computer skills, creative problem solving and collaborative capabilities are essential skills in today's job market but the present school curricula are based on a different agenda. Therefore, schools must have the information infrastructure and tools to enable them to develop these skills in their students. The Smart Valley, Inc. realized that "we can't replace the asbestos or repair the roofs, but we can expedite the

availability of technology in schools and ensure that students have the right tools and teachers have the training and support they need".

The vision statement of the Singapore Government for their smart school is that "the skills required for the future centre on thinking skills, learning skills and communication skills. IT-based teaching and learning will be one of our key strategies for equipping our young with these skills." The Singapore Government has committed SGD\$2 billion from 1997 to 2002 to implement the Master Plan for IT in education. The fund will be used for computers, networking of schools, physical renovations, software, building, courseware and training of teachers. A further maintenance dose of SGD\$600 million a year will also be provided to sustain the programme. The key target is for students to have hands-on use of computers for 30 per cent of their curriculum time. The Government has planned to provide one computer for every two pupils by the year 2002. The Singapore Master Plan has four overarching goals :

1. enhance linkage between the school and the world around it so as to expand and enrich the learning environment;
2. encourage creative thinking, lifelong learning and social responsibility;
3. generate innovative processes in education;
4. promote administrative and management excellence in education.

Malaysia's vision statement for its smart schools is "to liberate human beings from

the mundane and uncreative aspects of learning to living and learning in the cyber world of learning via wired learning” Their project entails that “by the end of 2020, all the 10,000 schools in the country will be smart schools”.

In Victoria, Australia, the Government has long recognized both the potential and the challenges for society that information technology brings. As society advances further into the Information Age, schools must use communication and multimedia strategy to enhance the quality of all aspects of education, especially student learning. The Department of Education, Victoria, has set the year 2001 as the time target for implementation of the Learning Technologies Plan. With the implementation of the Plan the following behavioural gains in principals, staff and students will result.

- having access to computers they will be able to use a range of applications and curriculum products and on-line information and communications as a routine part of the school’s educational and operational programme;
- become regular, competent and discriminating users of learning technologies in the daily activities and programmes of the school;
- acquire skills in the use of a range of technology tools;
- show leadership and innovation in the use of learning technologies.

The smart schools in Victoria have been called *navigator schools*. The Glen

Waverley Secondary College is a state-of-the-art secondary school and is one of the *navigator schools*. It is located in the eastern suburbs of Melbourne. Following is a brief profile of the Glen Waverley Secondary College as an illustrative example of a functioning smart school

Glen Waverley Secondary College

This secondary school offers education from Standard VII to Standard XII. It comprises

- a \$7 million world-class Science and Technology Centre with a 187-seat Lecture Theatre equipped with the latest in audio-visual and communication facilities, design room capable of delivering CAD (Computer Aided Design) programmes, suites of science laboratories and computer networked classrooms capable of supporting a wide range of computer based learning technologies,
- 400 networked computers with Internet and Library access facilities, located throughout the school;
- notebook computers for students’ use in the classroom, and one for each of the 120 staff;
- an extensively stocked library;
- a \$1 million Senior Student Centre;
- a fully developed Art Wing;
- a Drama Centre,
- a music centre;
- a large assembly hall; and

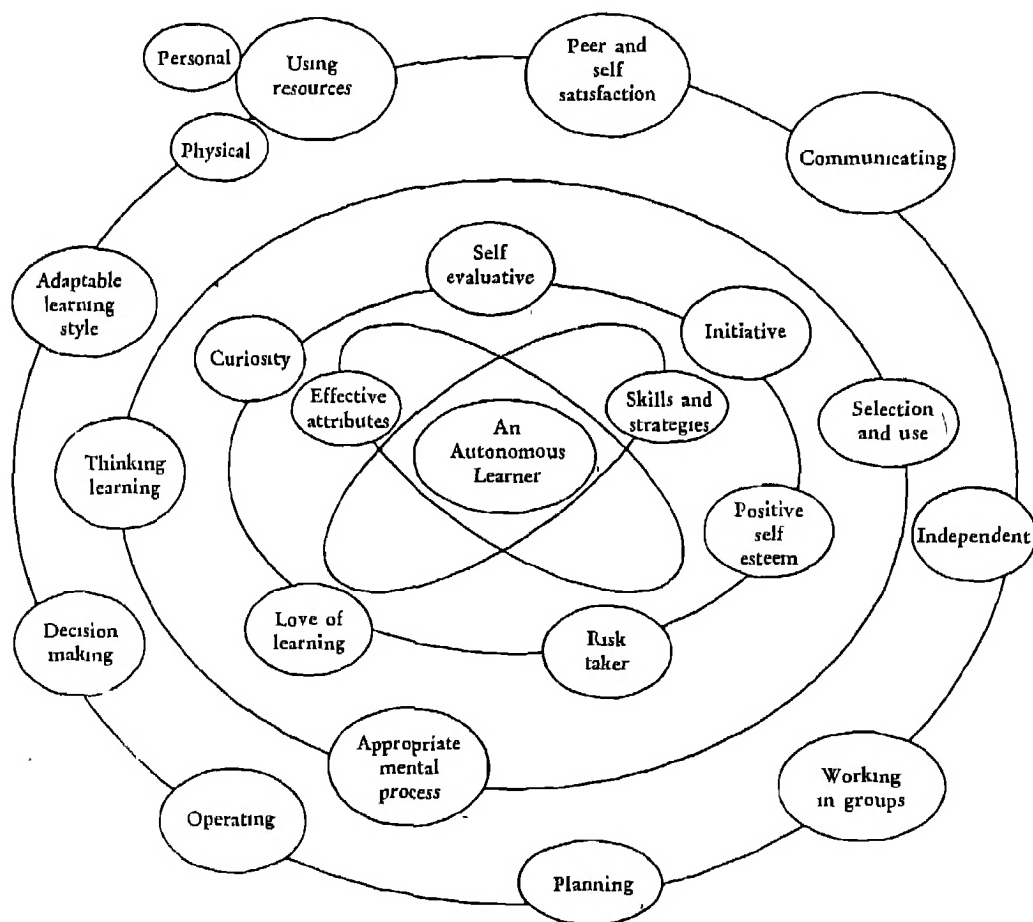
— a gymnasium oval and artificial grass, multipurpose playing surface.

The school has about 1500 students drawn from over forty nationalities

The educational programme of the school is designed to support the development of the whole person, a person with positive self-image, who seeks excellence

and respects the rights of others, has an international perspective and possesses the skills to operate successfully as a global citizen. The school helps each student in developing as an autonomous learner. The following diagram shows the concept of an autonomous learner defined by this school.

THE AUTONOMOUS LEARNER



Do We Need Our Own Smart Schools ?

The smart school projects of the different countries make it imperative that if our children also are to be educated for high paid knowledge-work and for contributing to a learning society, they may have to be schooled differently from the teaching-learning taking place even in the best of public schools in the country today. The emphasis given to IT by the Boards of Education, by and large, is on teaching and learning of courses on computer science and of the IT tools. At present only a few schools may be using IT as a process for enhancing learning. Therefore, the need is to reorient schools for adopting pedagogy appropriate for preparing children to become lifelong learners and for giving them skills needed for living fully in the emerging Information Age. It is heartening to note that under the component Operation Knowledge in the National Action Plan for Information Technology the Government has resolved to open smart schools.

With the globalization of the economy the skills that our children will require will be similar to what children in the developed parts of the world are getting at their schools. Instead of rediscovering wheels the experiences of other countries on smart schools may have to be analyzed for developing a blueprint of our smart schools.

Some thinking on making education in India relevant to an information society is already available. It may be appreciated that hardware and software undergo frequent turnover with advancement in IT and

communication technology. In India also, smart schools will have to keep pace with the global developments in IT. This will require a radical shift from the mind-set of sticking with the machines once acquired even after they have become obsolete. Continued use of the fourteen-years-old BBC microcomputers by nearly 3000 schools for teaching computer literacy even today is anachronistic and a waste of effort. The IT tools in smart schools may have to be kept updated.

In a smart school each student will be made information technology literate at the elementary stage itself. Initially, for every four students one computer may be made available by the school. All the computers will be connected in an Internet and to the Internet with a fast connection capable of supporting video-conferencing. Students will learn by processing information accessed from the library and the Internet. The teaching and learning continue to be of the traditional school subjects but the principal responsibility for learning will now be of the students who under the guidance of their teachers will work on both individual and group projects. It has been established that this mode of learning builds self-esteem and confidence.

The biggest challenge in commissioning a smart school will be finding teachers for playing the role of navigator to students' learning. Teachers of smart school will have to follow pedagogy that uses IT as a tool for learning the school subjects and avoid the pitfall of combining IT with the

traditional pedagogy acquired from the teacher education programmes.

The smart school project will be several orders of magnitude more expensive than what it costs to set up a good school. There will be an initial heavy capital investment in purchasing state-of-the-art computers but funds will be required for meeting substantial recurring expenditure for obtaining high speed Internet access, maintenance of

hardware and software and for upgrading them. If our children have to be educated at levels comparable to the quality and content of education that countries like Singapore, Malaysia and Australia are giving to their children, resources for setting up smart schools may have to be made available by the State or by entrepreneurs or by both. The challenge is to start smart schools now.

The author is thankful to Professor Utpal Mallik for providing information on smart schools accessed by him from the Internet

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Zero Lecture Programme of Teacher Education

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The educational scenario of the country is undergoing continuous change with the infusion of new ideas and experimentations conducted at various levels. The aim of all these changes is to improve the educational system so that it can play its role in achieving the goals set for national development. Zero Lecture Programme of Teacher Education is one such programme which has significant impact in the area of school education, teacher training, child rearing, material production and instructional management. The author in this article has lucidly described the concept of Zero Lecture Programme (ZLP). He suggests that this innovative strategy needs careful understanding and nurturing on the part of micro-level decision-makers

IF A SOCIETY values scientists, or pays scholars well, or esteems wrestlers, then schools start producing a shadow-behaviour and start the process of redesigning the contents of its education accordingly. Contents and processes of school education are dependent upon such preferences.

Some others believe that the schools ought to *dream new castles in the air* and then start building these castles on the ground. We have to decide whether schools can play an active role. We may know that such active roles are also expected from many other agencies working in the society. What is so special about schools? How

can one start the new dreams? How can additional learning resources be identified and used for developing new capabilities required for fulfilling such dreams?

Have we to prepare our teachers in an entirely new fashion? In *Changing Teachers, Changing Times* published in 1994, the author, Hargreaves says, "In England and Wales, policy makers, tend to treat teachers rather like Naughty Children, in need of firm guidelines, strict requirements, and a few short, sharp, evaluative shocks to help them reach up to the mark. In United States, the tendency is to treat and train teachers more like Recovering Alcoholics,

subjecting them to step-by-step programme of effective instruction or conflict management or professional growth in ways which make them overtly dependent on pseudo-scientific expertise developed and imposed by others".

The author further says, "Measures like these are disrespectful. They fail to show regard for the professionalism of teachers in terms of their ability and duty to exercise their discretionary judgement in the circumstances of the children. They fail to deal with other vital purposes, which drive what the teacher does, and the kind of person a teacher should be."

How do we prepare our teachers for true teaching? The guiding principles of such teaching in a school called Mirambika are . the first principle of true teaching is that, nothing can be taught. The teacher is a helper and a guide, not an instructor or taskmaster. The teacher does not impart knowledge to the child, but facilitates drawing out knowledge and only shows the child how to acquire knowledge for himself; the second principle is that the mind is consulted in its own growth. Everyone has something unique, a chance of perfection and strength; the aim of education is to draw this out and make it perfect for a noble use; and the third principle of education is that, education works from the near to the far, from what "is" to what "should" be. Learning is contextual and experience oriented and starts from the direct environment of the child.

Because the mind has to be consulted in its own growth, the planned activities

are mostly open-ended so that a child can find out a way of his own. If a child has a workable idea of his own he is allowed to be busy with it. Children learn often in spurts, a time of one pointed concentration on a specific concept. If we allow space and freedom for such spurts, the child learns his concepts thoroughly, because the assimilation and utilization are self-directed. A learning environment like this helps a child at a young age to become aware of personal capacities and to start taking responsibility for his own actions.

As the child grows he can take more and more responsibility. Older children often work on individual projects that they have chosen themselves and planned together with a teacher. Our aim is a self-directive and a self-corrective learning process for all the parts of the being. When the child errs, scolding, or punishing would have an adverse effect. As adults, we must learn to see that in a learning process mistakes are natural pointers, telling us where we can become perfect. Perfection does not come through rigidity or feelings of guilt.

In continuation with the programme of the Hoshangabad Science Teaching Programme (HSTP) of Madhya Pradesh, Zero Lecture Programme (ZLP) of Indore, Mirambika Programme of New Delhi, the District Institute of Education and Training (DIET), Daryaganj has taken a decision to introduce self-managed and self-resourced zero lecture programme in elementary teacher training programme. The concept was introduced and approved by the Pro-

gramme Advisory Committee, the faculty from DIET, Daryaganj and other institutions were oriented through a series of workshops and discussions. The programme was launched on a volunteer basis. About two dozen teachers volunteered to join the programme; about two to four teacher educators showed keen interest in this programme. A small 'institution' in an institution was created. Dr D.P. Singh, faculty member, DIET, Daryaganj, his faculty, and the participating students collectively planned the programme and managed it through participatory processes. The relationships between the students and the faculty, students and other students, and students and principal, were informal, respectful and intimate. The group worked like members of a well-knit family. Personal and professional difficulties were shared mutually and solved collectively.

The students planned, prepared and monitored the physical layout of a specially designated room called ZLP room. Aesthetic care was a dominating principle of the physical environment of this room; however, the economic aspects of this exercise were not ignored. There was no administrative support from cleaners, office-clerks, faculty members, or others regarding room layout, and room requirements. This room was not a room in the ordinary sense. It was a study room, resting room, living room, dining room, music room, library room, storeroom, and even a meditation room. It was all in one. Different corners and spaces of the room were earmarked for different activities in

different slots of time. The room was opened in the morning, cleaned, regulated during the day, and closed in the evening by the students. My understanding and experience suggests that such a facility is the most important input for implementing self-managed zero lecture programme.

The students worked in different groups consisting of three to five students. They considered the given syllabus and distributed different topics amongst themselves. The students learnt to review the topics, expand the concepts, used techniques of task analysis, searched for relevant reading materials, prepared suitable notes and packaged it into a presentable instructional design. After the preparation of this design, the students, in smaller groups, made presentations. The presentations were serious, sometimes formal, and other groups participated as peer-learners and peer-observers. The faculty members observed such presentations but restrained themselves from active participation. In fact, students themselves initiated clarifications and analysis of issues and sometimes even counter arguments. Discussions were open yet serious. In case the teachers felt the need to probe into the discussion, care was taken to stimulate questioning by students rather than the provision of ready-made answers by teachers. Often the discussions remained inconclusive for days together.

To keep the environment alive and communicative, teachers developed activities together and exchanged skills.

In young children too, the 'silent inner voice' is active. Part of the learning process

is to make that little voice stronger. Grown ups must be careful not to trample it with adult expectations and conceptions. If we can accept the notion that there are different levels of perfection, we create a space for ourselves and for the child in which we all can remain upright and breathe freely. It allows us jointly, or for the child on his own, to decide on the level of perfection to aim at. For the child, learning becomes a conscious interaction with himself and the task at hand. It helps the child to take responsibility, for ZLP has been able to create an impact in the area of school education, teacher training, child rearing, material production, and institutional management. The cooperative, free and integrated environment prevalent within ZLP is different from the competitive environment prevalent in the society. The students, teachers, and other members of ZLP find it difficult to arrive at a harmony with the larger and conservative society. The innovative strategy needs careful understanding and nurturing on the part of micro-level decision-makers. Otherwise such an innovative institution will become indifferent, fragile or an oasis in a desert.

I should close my observations by referring to commentary on producing reflective teachers through constructivist approach. Reflective teachers argue that the trend towards developing a theoretical framework in teacher education is resulting

in a movement away from a positivist orientation to a more constructivist approach to teacher preparation. Within a positivist teacher education programme a student teacher assumes that outside forces determine standards, that people conform to established practices, and that people follow mandates handed down by those in authority. The hidden curriculum within these programmes is to create teachers who are followers, who do as they are told, and who communicate this to their students.

The constructivist framework emphasizes the growth of teachers through experiences, reflection and self-examination. The constructivist programmes recognize that teachers are primarily persons who enter the programme, processing values and beliefs that form the foundation from which they make professional choices. Teachers within this framework view teaching as ongoing decision-making rather than as a product or recipe. These teachers learn that significant education must present learners with relevant problematic situations in which the learner can manipulate objects to see what happens, to question what is already known, to compare their findings and assumptions with those of others, and to search for their own answers. As a result, constructivist teacher education must provide teachers with the same orientation and experiences in both course work and field experiences.

Adapted Physical Education for Children with Special Educational Needs in Common Schools

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Special educational needs (SEN) of children are being met in common schools. The Persons with Disabilities Act 1995 also emphasizes placement of disabled children in common schools. In this research paper it has been highlighted that adaptation of school curriculum is essential for the education of SEN children in common schools. We have to adapt physical education and sports activities also to the needs of the disabled so that they can develop their full potential. Teachers' orientation and orientation of all children including SEN children should be undertaken by the states. Each disability area needs specific adaptations, which in turn will help SEN children to participate skillfully in social activities and help them in leading independent lives.

CHILDREN with special needs are being integrated in common schools in the country. The inclusive system of education also advocates inclusion of all children in the common schools. Orientation of all the teachers working in the system is imperative to realize the goal of education for all. A course of physical education and sports activities has been developed by NCERT. In order to make it accessible to Special Education Need (SEN) children, a research study was taken up to adapt it according to the needs of different types of disabled children. The adapted material was tried out and useful suggestions have emerged out of it.

The Need

The NCERT implemented a UNICEF assisted Project to develop context specific delivery modalities to increase enrolment of disabled children and improve their retention in general schools through improved educational facilities by way of adaptations and adjustments in curricular material and methods of teaching. A study was taken up to adapt the physical education and sports curriculum developed by the NCERT for Classes I–VIII. It was felt by the ten participating states under the Project that in order to integrate different

types of disabled children with normal children, physical education and sports activities should also be adapted, because education means not only cognitive development, but development of the total personality of the child. Physical education and sports inculcate tolerance, team spirit and a spirit of sharing joys and sorrows. It enhances the motor movements of children and develops muscle power. It also helps in developing a positive attitude towards exercise

Physical Education for the Disabled

For organizing physical education and sports activities for the disabled, very little adaptations are required. With little adaptations and adjustments all disabled children can participate in general physical education activities with normal children. Usually three terms are used for imparting physical education to the disabled

1. *ADAPTED PHYSICAL EDUCATION (APE)* · It is a modification of traditional physical education activities to enable the SEN child to participate safely, successfully and with satisfaction
2. *CORRECTIVE PHYSICAL EDUCATION* : It is related to activities designed to habilitate or rehabilitate deficiencies in posture or mechanical alignment of the body.
3. *REMEDIAL PHYSICAL EDUCATION* · It is related to the activities designed to habilitate or rehabilitate functional motor movements and develop physi-

cal and motor pre-requisites for functional skills

A good physical education programme accommodates individual needs of SEN children. Physical Education for SEN children means development of

1. Physical and motor fitness
2. Fundamental motor skills and patterns
3. Skills in dance, individual and group games and sports

Methodology

The NCERT syllabus for physical education for Classes I-VIII was adapted by subject specialists and disability area specialists. Each curricular area in APE was analyzed. Skills required to be developed in each type of disabled child were mentioned against that particular area of disability and the nature of adaptation to be made by the teacher to suit the needs of the child were also indicated. In collaboration with SRKV College of Education, Coimbatore, a ten-member committee was constituted to finalize activity-wise adapted physical education cutting across the four disability areas, to develop observational formats for field tryout of APE material, and to develop evaluation criteria during field testing.

Some leading institutions in the country were selected for field tryout of the APE material. About 51 visually handicapped, 20 hearing impaired, 40 educable mentally retarded and 80 orthopaedically handicapped children were included in the study along with their normal counterparts

in regular schools. Around 500 normal children participated in APE with their SEN counterparts.

The tryout was done for a period of 30 days. Two hours were devoted each day by each institution. Teacher observation schedule was developed and provided to all the institutes to collect data. After field tryout the data were analyzed and each institute prepared a report. The reports were consolidated. With the help of experts in the field adapted physical education curriculum was developed along with guidelines for adaptation.

The adapted material was implemented in regular schools of 10 project sites. Each state has translated the material into its regional language and it is now a part of the school curriculum.

Major Findings and Recommendations of the Study

The experts in the area of APE are of the opinion that APE for the disabled reduces for them the risk of becoming dependent on others for social living skills. Physical education teachers can contribute largely towards reducing this risk and facilitating independent living. Efforts in this direction would require development of the following in SEN children:

1. Recreational motor skills for independent functioning in the community.
2. Physical fitness.
3. Ambulatory skills to master mobility at home and in the community environment.
4. Physical and motor pre-requisites to self-help skills, vocational skills and skills necessary for participation in self-fulfilling social activities.

All SEN children have physical, social and emotional needs like other children. These needs can be met more effectively in APE classes. For this certain conditions are to be met.

1. Instruction level of activity should be commensurate with the ability level of the child. Some forms of individualized APE instruction should be developed.
2. Activities should be modified to accommodate individual differences in group games.
3. The social environment should promote proper interaction between SEN and normal children.
4. Participation of all SEN children should be encouraged and spectatorship should be reduced to the minimum.

In the integrated system of education SEN children are allowed to progress according to their capabilities. Hence, in APE classes also they should be given opportunity to proceed at their own pace. Activities should suit their abilities. Rules of games, objectives of each game, and play material need adaptations. Improvement in weakened muscles, affected limbs, or emotional-social development can be one objective. Progressive learning techniques should be used to reach the desired goals, but the beginning should be made slowly. Reduc-

ing the size of the play area by changing the boundary lines or increasing the number of players, use of lighter equipments, reducing the speed of moving objects by changing the throwing styles, etc. will help SEN children in overcoming their emotional problems through success experiences. Excess competition, excitement, etc. are not desirable. This may motivate the child to move too fast or quickly which may result in muscular damage, sprain or accident. Excessive fatigue also has a bad impact on the overall system of SEN children.

Disability-wise Recommendations

The research study reveals that very little adaptation and adjustments in material methods and evaluation will help integrating the SEN children in APE activities in regular schools. Teachers' orientation and orientation of all the children of the school is, of course, a pre-requisite for better results, as is in the case of integration in other curricular areas. The role of National Colleges of Physical Education in the country cannot be ignored in orientation of general teachers of physical education for APE. The Lakshmibai National College of Physical Education was actively engaged in this study and experts have given valuable suggestions. Maruthi College of Physical Education, SRKV College of Education, Avinashilingam Deemed University, School for the Deaf, Mysore, Regional College of Education, NCERT (now RIEs), Air Force

Golden Jubilee School, Amar Jyoti Research and Rehabilitation Centre, etc. were involved with the study and have contributed significantly.

Experts have suggested that if principles of adapting physical education activities are taken care of properly, any state curriculum of physical education can be adapted to the needs of SEN children. If teachers took care of the following recommendations of the study while integrating each type of SEN children in their physical education class, they could develop the total personality of the children.

1. *Hearing Impaired Children*

- Ensure that all normal children and SEN children have been oriented to the needs of the hearing impaired
- Modify instructional environment by providing written instructions, using sign language as and when needed, and making lip movements visible to these children.
- Exercises which require rhythm should be taught with peer support and proper observation of the activity by these children.
- Physical education teacher should be given orientation to use signs and understand them when used by children.
- Provide audio-video feedback to ensure that children understand teachers' commands.

2 *Visually Impaired Children*

- All instructions should be clearly audible.
- Manual guidance would help the child.
- Seek the attention of the child by addressing him/her by name.
- For low vision children bright and bold colours and letters should be used for providing written instructions.
- Sports equipments should be in bright colours for low vision children
- While initiating a new exercise or game proceed slowly
- Ensure the safety of play materials.
- Auditory balls, shuttle cocks, and other play material should be used.
- Proper space should be provided between two partners while playing on the ground
- Prepare sighted peer volunteers to guide these children.
- Peer support in all the activities is useful.
- Organize group instruction and individual instruction sessions
- Counselling of both SEN and normal children in physical education classes from time to time brings good results

3. *Educable Mentally Retarded Children*

The mildly mentally handicapped students are also integrated in common schools.

Like other curricular areas they require constant reinforcement of the cognitive aspects of each game. Peer support is crucial for these children. Teachers should not expect much from them. Imitation techniques, task analysis and peer support are the only methods which can make them understand better and perform better. Classmates should be oriented to the need of these children.

4. *Orthopaedically Handicapped Children*

Orthopaedically handicapped (OH) children have different types of difficulties in standing, moving, sitting, etc. The teachers should assess the capabilities and strength of the bones and muscles of each OH child before asking him to perform certain activities. For providing corrective and remedial measures, the teachers must know the nature of the children's problems. Therapy equipments like wall bar, wall pulley, iron dumb bells, barbells, etc. should be used for corrective and remedial activities. Reduction in the size of playing area, number of points required for a particular game, time required for any activity, etc. will help these children experience success and avoid frustration. Play equipments should be used according to the needs of the individual child. Wheelchairs and devices such as canes, walkers, crutches, etc. should be provided to overcome their handicaps. Play material should be adapted. Balls in different sizes may be given to them to play. Indoor recreational activities also enhance their inner strength and give

them joy. Certain activities like *kabaddi*, combatives, gymnastics, judo, rope climbing, etc can be replaced by indoor recreational games for those who have typical problems.

This study was completed in two years' time. Based on the tryout reports, interviews with experts in the field of special education and physical education, and observation of children's performance, it was found that pictorial representation of activities help almost all children and teachers except a few with visual problems. Verbal instruction helps visually impaired children as well as normal children. Written instruc-

tion and use of gestures help hearing impaired children as well as their normal counterparts. Allocation of suitable roles and substitution of certain games, sports and other activities are of great help for orthopaedically handicapped children. Ten states are following this APE material and are of the opinion that it is self-instructional in nature for majority of the children and teachers and cent per cent useful for all children including SEN children studying in common schools. There is need to organize short-term orientation courses for physical education teachers to orient them at the state level regarding APE material.

Human Resource Development Climate in Improving Quality Management in Teacher Education

A Study on DIETs

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Knowledge of one's strengths helps one to become more effective. Institutional performance depends upon the quality of manpower. We cannot make an institution prosperous unless and until the quality of human resource development (HRD) is improved. Human resource development is related with the activities and processes undertaken to promote intellectual, moral, psychological, cultural, social and economical development. Therefore, keeping in view the general technical efficiency in educational institutions there is a need to study the Human Resource Development climate of teacher educational institutions. A study was undertaken to appraise the existing HRD climate of teacher educational institutions, which are preparing teachers for elementary education. The author found some factors affecting the HRD climate in the District Institutes of Education and Training (DIETs). She has given some important suggestions to improve the HRD climate in the DIETs.

INSTITUTIONAL performance depends upon the quality of manpower and the multidimensional support which the institution receives from those who manage the human resource. The management of human resource is highly professional in the Indian private sector but the service sector especially teacher education is yet to follow suit.

Widespread *ad-hocism* and lack of professionalism prevail, with regard to the management of human resource, adversely

affecting the efficiency and performance of the institution. The organization of human resource calls for a conducive managerial climate based on human relationship. Recognizing human dignity, competence and potential on the one hand and accepting compatibility of individual and group goals to the institutional objectives on the other, human relations facilitate integration of people into a work situation that motivate them to be together productively, cooperatively and with economical, psychological

and social satisfaction by taking care of their needs, emotions and aspirations.

It is rightly observed by an educationist that all the activities of an institution are initiated and determined by the persons who make that institution. Plans office computers, automated equipment and all else that a modern organization uses are unproductive, but for the human beings who design this equipment and decide where and how to use them. They modernize the technology employed, secure the capital needed and take all the major decisions.

Keeping in view the general technical efficiency in educational institutions, there is a need to study the HRD climate of the educational institutions.

HRD may be defined to include the activities and processes undertaken to promote the intellectual, moral, psychological, cultural, social and economical development of the individual in order to realize the highest human potential as resource for the community

Design of the Study

Sample

The study was confined to the 154 academic faculty members of 16 DIETs of Punjab, Haryana, Rajasthan, UP and Delhi.

- 1 A 40 items questionnaire having a five-point scale measuring items Top-support Feedback, Supportive, HRD Cli-

mate, Openness versus Communication Trust, Team-spirit Collaboration and Reward was developed.

2. Interview, observation and field notes.
- 3 Records and publications.

Statistical Findings

The present study was conducted on 16 DIETs of five states to measure the HRD climate. The following table indicates the mean and SD scores pertaining to DIETs in five states for the Traits — Responsibility, Risk-taking behaviour, Top-support, Feedback, Supportive HRD climate, Openness (versus) Communication Trust, Team-spirit, Collaboration and Reward as well as of the total HRD climate of the five states.

A scrutiny of Table 1 indicates that the HRD climate of the DIETs of Punjab was the best. The next in the order were Rajasthan, UP, Haryana; the HRD climate of the DIETs of Delhi was not conducive.

Significant differences were found in the HRD climate of the DIETs of Punjab and Delhi as well as between the DIETs of Rajasthan and Delhi in the factors of Responsibility, Top Support, Feedback, Supportive HRD climate, Collaboration and overall HRD climate Punjab and Rajasthan had a more conducive HRD climate than Delhi. The table of t-ratio

TABLE 1
Mean, SD and T-Ratios of HRD Climate of Sampled States

HRD Factors	1 Haryana N=24		2 UP N=48		3 Punjab N=20		4 Rajasthan N=29		5 Delhi N=33		Sig t-ratios
	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd	
1. Responsibility	26.66	5.52	26.52	7.13	28.70	4.63	28.06	3.92	22.93	5.55	3 & 5, 4 & 5
2. Risk Taking	08.87	2.50	7.56	2.40	8.20	1.79	7.37	1.95	6.57	1.90	
3. Top-support	30.50	6.99	30.62	8.34	31.60	5.59	30.93	6.41	24.06	7.04	18&5, 28&5, 38&5, 48&5
4. Feedback	14.91	3.67	15.22	4.46	15.45	2.50	15.34	3.01	12.30	3.92	28&5, 38&5, 48&5
5. Supportive HRD	26.66	6.30	27.12	7.11	27.55	5.12	27.17	5.43	20.75	7.04	18&5, 28&5, 38&5, 48&5
6. Open Vs Communicative	18.70	4.44	19.60	5.30	18.85	4.42	19.75	3.79	16.42	4.42	28&5
7. Trust	3.45	0.97	3.89	1.11	2.75	1.33	3.27	1.0	2.57	1.22	28&5, 18&5, 38&5
8. Team Spirit	4.05	0.77	3.45	1.44	3.80	1.15	3.13	1.05	2.69	1.18	18&4, 18&5, 38&5
9. Collaboration	15.50	4.32	15.25	4.20	16.45	2.56	16.44	3.00	13.27	3.71	38&5, 48&5
10. Reward	4.12	0.85	3.14	1.52	3.20	1.10	3.34	0.89	3.48	1.22	
11. HRD Climate	151.50	32.96	152.85	36.71	156.55	24.63	154.66	25.44	125.09	30.30	18&5, 28&5, 38&5, 48&5

revealed the significant differences between the HRD climate of Haryana and Delhi and UP and Delhi for factors of Top Support, Supportive HRD climate, Trust and in the total HRD climate. Haryana and UP had better HRD climate than Delhi. No significant differences were found between the HRD climate of Punjab and Rajasthan, Haryana and UP, Punjab and Haryana and between Rajasthan and Haryana except in Team-spirit, which was better in Rajasthan as compared to that of Haryana. The mean and SD of all the 16 DIETs for all the factors of HRD were calculated which are presented in Table 2.

In order to find out the significant difference in the HRD climate, t-ratios were computed. It was found that 80 t-ratios were significant which led to the following conclusions

1. In six out of ten factors of HRD, the climate of UP DIET was found to be significantly below average as compared to that of Punjab, Rajasthan and Haryana.
2. One of the DIETs of Delhi was found to be significantly below average in Team Spirit and in Supportive HRD climate as compared to the DIETs of Haryana, Punjab, UP and Rajasthan.
3. The HRD climate of one of the DIETs of Delhi was lower than one of the DIETs of UP in the HRD factors of

Responsibility, Supportive HRD climate, Openness versus Communication and Collaborations.

4. The HRD climate of one of the DIETs of UP was significantly superior to the other DIET of the same state.
5. One of the DIETs of Punjab was significantly better in the HRD climate in terms of Responsibility, Supportive HRD climate and Openness versus Communication as compared to the DIETs of Delhi
6. One of the DIETs of Rajasthan was significantly better in its HRD climate in terms of Responsibility, Supportive HRD climate, Openness versus Communication and Collaboration as compared to the DIETs of one DIET of UP.
7. No significant differences were observed among all sampled DIETs for the factors of Top-support and Feedback. This implies that Top-support and Feedback are being received by all DIETs.
8. Maximum significant differences were observed for the factors of Responsibility, Supportive HRD climate and Openness versus Communication.
9. On the basis of the above conclusions it is evident that significant differences exist in the HRD climate of the sampled DIETs. In order to see which of the traits is operative and which is not in the HRD climates of various DIETs the following techniques were used.

TABLE 2
Mean SD and T-Ratio's of Sixteen Diets

HRD Factors	HRD Climate in DIETS Haryana and UP										HRD Climate in Diets Punjab and Rajasthan					
	1 Gurgaon N=10	2 Sonapat N=14	3. Mathura N=14	4. Agra N=8	5 Lucknow N=15	6 Bareilly N=11	7 Ludhiana N=10	8 Amritsar N=10			Mean	SD	Mean	SD	Mean	SD
1. Responsibility	25.00	6.01	27.85	5.02	25.71	6.52	18.62	6.54	31.00	2.36	27.18	8.03	26.90	5.13	30.50	3.44
2 Risk Taking	5.80	2.69	7.64	2.13	7.42	2.68	4.87	2.41	8.73	1.22	8.09	1.86	7.90	1.66	8.50	1.95
3 Top-Support	28.70	7.87	31.78	6.26	31.21	7.22	21.87	7.27	37.13	6.39	31.45	9.19	28.80	4.96	34.40	4.90
4 Feedback	13.20	4.15	16.14	2.82	15.00	4.52	10.87	4.18	17.93	1.75	15.00	4.93	14.80	2.69	16.10	2.23
5 Supportive HRD	23.50	7.61	28.92	4.12	27.57	4.71	18.37	6.18	31.00	4.67	27.63	8.21	25.40	5.62	29.70	3.08
6. Open Vs Communication	16.80	4.98	20.07	3.60	20.92	4.02	11.87	4.18	22.20	2.80	20.00	5.21	15.90	4.20	21.80	2.09
7 Trust	3.10	0.99	3.71	0.91	4.70	0.82	3.37	1.84	3.86	0.91	4.09	1.04	2.00	1.41	3.50	0.70
8 Team Spirit	4.20	0.91	4.00	0.67	3.64	1.44	3.00	1.19	2.93	1.22	4.27	1.61	3.30	1.25	4.30	0.82
9. Collaboration	13.90	5.54	16.64	2.89	15.35	3.56	11.62	4.50	18.26	2.01	13.63	4.45	15.60	2.87	17.30	2.00
10. Reward	4.20	0.91	4.07	0.82	3.07	1.81	2.25	1.28	4.53	0.63	3.90	1.30	2.80	1.13	3.60	0.96
11 Total	138.40	37.88	160.85	26.51	154.00	32.03	106.75	35.24	174.60	21.36	155.27	42.24	143.40	23.57	169.70	18.46

TABLE 3
Minimum and Maximum Range of Mean
of HRD Factors

Serial Number	HRD Factors	Minimum Range	Maximum Range
1	Responsibility	2.57	4.41
2	Risk-Taking	2.43	4.41
3	Top-support	2.43	4.50
4	Feedback	2.40	4.47
5	Supportive HRD Climate	2.31	4.46
6	Openness Communication	2.88	4.43
7	Trust	2.44	4.09
8	Team-spirit	1.50	4.30
9	Collaboration	2.90	4.50

The observation of Table 3 indicates that Team Spirit was not operating properly in the HRD climate of the DIETs whereas Collaboration was highly operative. The traits of Reward, Trust, Supportive HRD climate are supposed to be developed in the DIETs. However the traits of Responsibility, Openness versus Communication, Risk-taking behaviour, Top-support are functional in the HRD climate of the DIETs. The hierarchical status of the various factors of HRD climate of 16 DIETs was worked out which is presented in Table 4.

The DIET profile of HRD factors was prepared on the basis of standardized Mean and SD of all HRD factors of the standard five-point scales as Superior, Above Average, Average, Below Average and Low.

The profile revealed the following.

— Only five DIETs were having conducive

cive HRD climate.

- Eight DIETs were found to be having low HRD climate
- The table of hierarchical status of various HRD factors confirmed that the HRD climate in the sampled DIETs was different.

Qualitative Findings

In order to answer the research question i.e. the factors affecting the HRD climate, a qualitative content analysis was done of the data collected through the secondary sources. The qualitative analysis concluded that the following factors might have contributed to the conducive and non-conducive HRD climate in the DIETs.

Factors Affecting HRD Climate

- Inconsistent promotional policies
- Poor perception of the training needs
- Irrational placement practices
- Extra workload on the existing staff thus affecting the HRD climate
- Shortage of staff and lack of other resources affected the HRD climate in many DIETs
- Deputation of faculty from other institutions
- It was observed that many state governments had posted secondary school teachers in DIET who had no experience of working in the area of elementary education

TABLE 4
Hierarchical Status of DIETs as per the Factors of HRD Climate

Sr No	Responsibility		Reward		Risk-taking Behaviour		Top Support		Feedback		Supportive HRD climate		Openness Vs Communication	
	Mean		Mean		Mean		Mean		Mean		Mean		Mean	
1	Lucknow	31.00	Lucknow	4.53	Lucknow	8.73	Amritsar	34.40	Lucknow	17.93	Lucknow	31.00	Lucknow	22.20
2	Amritsar	30.50	Gurgaon	4.20	Amritsar	8.50	Lucknow	34.13	Jodhpur	16.80	Amritsar	29.70	Amritsar	21.80
3	Jodhpur	30.20	Sonepat	4.07	Bareilly	8.09	Alwar	32.92	Sonepat	16.14	Alwar	29.33	Jodhpur	21.20
4	Alwar	29.23	Bareilly	3.91	Ludhiana	7.90	Jodhpur	32.90	Amritsar	16.10	Sonepat	28.93	Alwar	21.00
5	Sonepat	27.86	Motibagh	3.69	Jodhpur	7.80	Sonepat	31.79	Alwar	16.08	Jodhpur	28.40	Mathura	20.93
6	Bareilly	27.18	Amritsar	3.60	Sonepat	7.64	Bareilly	31.45	Mathura	15.00	Bareilly	27.64	Sonepat	20.07
7	Ludhiana	26.90	Rajinder Nagar	3.56	Alwar	7.46	Mathura	31.21	Bareilly	15.00	Mathura	27.57	Bareilly	20.00
8	Mathura	25.71	Alwar	3.46	Motibagh	7.46	Ludhiana	28.80	Ludhiana	14.80	Ludhiana	25.40	Motibagh	17.85
9	Motibagh	25.62	Shahadra	3.40	Mathura	7.43	Gurgaon	28.70	Motibagh	13.62	Gurgaon	23.50	Darya Ganj	17.50
10	Gurgaon	25.00	Jodhpur	3.30	Pali	6.50	Motibagh	26.69	Gurgaon	13.20	Motibagh	23.38	Gurgaon	16.80
11	Pali	22.00	Pali	3.17	Shahadra	6.40	Rajinder Nagar	25.44	Darya Ganj	13.00	Rajinder Nagar	21.56	Keshav Puram	16.50
12	Keshav Puram	22.00	Mathura	3.07	Keshav Puram	6.00	Pali	23.33	Keshav Puram	12.00	Pali	20.33	Ludhiana	15.90
13	Rajinder Nagar	22.00	Darya Ganj	3.00	Rajinder Nagar	5.89	Agra	21.88	Rajinder Nagar	11.67	Darya Ganj	19.00	Shahadra	15.40
14	Darya Ganj	21.50	Keshav Puram	3.00	Shahadra	6.40	Darya Ganj	20.50	Pali	11.33	Agra	18.36	Pali	14.67
15	Shahadra	19.20	Ludhiana	2.80	Darya Ganj	5.75	Keshav Puram	19.50	Agra	10.88	Keshav Puram	16.00	Rajinder Nagar	14.44
16	Agra	18.63	Agra	2.25	Agra	4.88	Shahadra	19.40	Keshav Puram	9.60	Shahadra	15.80	Agra	11.88

TABLE 4 CONTD

Sr No.	Trust	Team Spirit	Mean	Collaboration	Mean	Total	Mean
1	Bareilly	Amritsar	4.09	Lucknow	4.30	Lucknow	174.60
2	Mathura	Bareilly	4.07	Jodhpur	4.27	Amritsar	169.70
3	Lucknow	Gurgaon	3.87	Alwar	4.20	Jodhpur	165.30
4	Sonepat	Sonepat	3.71	Amritsar	4.00	Alwar	163.31
5	Jodhpur	Mathura	3.70	Sonepat	3.64	Sonepat	160.86
6	Amritsar	Alwar	3.50	Ludhiana	3.31	Bareilly	155.27
7	Agra	Ludhiana	3.38	Mathura	3.30	Mathura	154.00
8	Pali	Darya Ganj	3.17	Motibagh	3.25	Ludhiana	163.31
9	Gurgaon	Motibagh	3.10	Gurgaon	3.15	Motibagh	138.62
10	Alwar	Pali	3.00	Bareilly	3.00	Gurgaon	138.40
11	Shahadra	Jodhpur	3.00	Darya Ganj	3.00	Rajinder Nagar	121.44
12	Darya Ganj	Agra	2.75	Keshav Puram	3.00	Darya Ganj	119.75
13	Motibagh	Lucknow	2.54	Shahadra	2.93	Pali	119.17
14	Keshav Puram	Rajinder Nagar	2.50	Rajinder Nagar	2.56	Keshav Puram	111.50
15	Rajinder Nagar	Shahadra	2.33	Pali	1.80	Agra	106.75
16	Ludhiana	Keshav Puram	2.00	Agra	1.50	Shahadra	106.20

- Most of those who were working in branches such as Planning and Management, Educational Technology, Curriculum Material Development and Evaluation had neither prior experience of working in these areas nor the requisite competence to perform the tasks. As a result, the functioning of the DIETs was affected and the desired goals were not achieved.
- Delayed sanctioning and release of grants
- Meagre amount of honorarium for resource persons
- In many DIETs the basic infrastructure facilities required for the professional growth of the academic staff were lacking. A few such facilities are reading room, good quality books in the library, communication facilities such as telephone, and
 - Lack of orientation to the faculty about the concept, procedure and importance of conducting action research in their area.
 - Under-utilization of funds
 - In a few DIETs only non-academic staff were using the computer for day-to-day office work only.
 - The faculty of District Resource Unit (DRU) was often found busy exclusively in district literacy campaigns thereby depriving their service to the DIETs for other developmental activities and programmes

Suggestions to Improve the HRD Climate of DIETs

The following HRD mechanisms may be incorporated to improve the HRD climate of educational institutions

Performance Appraisal . It is a process of ascertaining how effectively a person is performing a job with a view to helping him overcome his weaknesses and consolidating his strengths. Thus, measures to improve skills and motivation can be taken to improve the work culture. In view of the continuous technological developments, diversifications and emerging technological changes, it is essential that the personnel are continuously developed so that they can discharge their responsibilities effectively.

Training . Training stimulates development of the personnel and is linked with performance appraisal and career development. The training is imparted through formal in-service training programmes. It is recommended that based on the assessments of training requirements and the anticipated job task schedules the training must be organized objectively.

Reward . Rewarding performance and behaviour is an important facet of HRD. Appropriate rewards would not only recognize and motivate persons but also communicate the institutional values to them. Typical rewards include certificate of appreciation, honour in institutional programmes, or cash awards.

Welfare Activities : Welfare activities reflect the genuine concern of the authorities for

their staff and keep their behaviour desirable. HRD can pursue some essential aspects like residential accommodations, medical aids, finalization of financial entitlements due to them. All these act as direct motivators.

Quality of Work Life : In some parts of India, we have oppressively hot weather in summer and bitterly cold conditions in winter with no corresponding amenities for majority of the staff to enable them withstand their adverse effects. The majority of the work-force has to utilize crowded, inadequate public transport services. Hostile working conditions have a telling effect on the motivation of the work-force and their development. Dimly lit, badly ventilated rooms and many other such factors contribute to the high incidence of chronic diseases and demotivation.

Promotions : Scheme for quick promotions may be channelized. In a job attitude survey by Thirumalal (1996) 31.98 per cent respondents believed that seniority weighed most in promotion decisions in government services. Only 28.40 per cent believed that hard work and superior quality paid in getting a promotion in the civil services.

Feedback and Counselling : Knowledge of one's strengths helps one to become more effective, to choose situations in which one's strengths are required and to avoid situations in which one's weaknesses could create problems. This also increases the satisfaction of the individual. Often people do not recognize their strengths. Heads in

the HRD system have the responsibility for ongoing observation; and feedback does not exist in educational systems.

Motivation to the Academic Faculty to Undertake Research in the Area of HRD in Education : There is need to establish a climate in which experimentation in HRD is given a free rein to thrive and succeed in educational institutions. It should serve as a model for others to follow and improve. Teaching human resources of the academic faculty of DIETs ought to be motivated to put their heart and mind in research work. It is the quality of research work which governs the academic standards of the institute. Teaching and research have been wedded to each other. Both the activities are means to development of academicians. Research activities are important in DIETs. Creativity first erupts in the shape of valuable writings. Hence teaching should be creative. It is rightly said that application is the soul of knowledge.

Recruitment : Sustained efforts should be made to recruit qualified persons in DIETs. Improve the capabilities of the existing faculty through need based training. Motivate them through better service conditions and career development. Right placements on the job and proper induction are important aspects of the total function of HRD. The procedure for the above should be designed in such a way as to attract a suitable number of candidates qualified to meet established standards for work and conduct.

Suggestions for Further Study

1. This is a first attempt in this direction and only one questionnaire could be developed to survey the HRD climate of DIETs. There is a need to validate the results so arrived by others. Similar tools can be applicable to the other supportive staff in the hierarchy with a view to receive information. Direction can be sought from those who are already doing a lot to improve the HRD climate in order to have better output
2. In the present study the HRD climate was assessed on a five-point scale on the basis of HRD factors as measured through a questionnaire. The conducive and non-conducive HRD climate was attributed to the qualitative factors that were based on unstructured observation, interviews, field-notes, records and publication. For the replication of the study it is desired to develop a structured observation and interview schedule as a criterion variable against which the data obtained through a questionnaire may be correlated
3. The mere survey of HRD climate is insufficient. It has to be related with the quality of output. In the context of teacher education the natural corollary would be the better the HRD climate of teacher training institutions, the better the quality of professionalism in the trained teachers. Therefore, there is a need to take up a study where the cause-effect relationship is scientifically studied. Two types of variables are needed to be studied simultaneously i.e. the effect of HRD climate on teacher training institutions and on the quality of training methodology used in pre-service and in-service teachers' training. Significant differences of various institutions located in various regions in the country can be studied. On the basis of research findings policy decisions may be contemplated to improve the status of teachers who are the foundation builders of the nation.
4. Research findings indicate a high correlation among the HRD factors. Further factor analysis may be carried out to search the cluster of factors. Common factors may be clubbed together to have a comprehensive tool for the HRD climate survey for educational organizations. It was found that a few factors of HRD were not operative in DIETs, and a few are highly operative. In this regard controlled experimental studies may be planned by designing proper input to be provided for the development of those non-operative HRD factors and their impact on the quality of training methodology
6. Cross-sectional studies are required to be undertaken. In fact the need of the hour is to study the HRD climate of all educational organizations

Benchmarking in Academics

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Benchmarking is a popular technique extensively used in business and industry today. The attempt to adapt the best practices used in a sector by any institution is the essence of benchmarking. This article is related to the application of the technique of benchmarking in an academic setting. With the help of the example of a school striving to emulate the best practices available in comparable educational institutions the technique, process, and the different types of benchmarking are explained. A note of caution is struck to point out the limitations of the technique. Overall, it is recommended that schools could endeavour to apply the technique of benchmarking as it holds the potential to improve the processes of management in educational institutions.

CHANGES in the general environment in a country leave no sector or institution untouched. Liberalization of the economy might be related to trade, business, and industry alone. The current phase of liberalization in India is now expanding to influence other aspects of our society. For instance, the bureaucracy is feeling the impact and so are social institutions. The academia including all types of educational institutions be they related to schools, colleges, or universities are likely to feel the impact of the changes too. For example, the placing of the private universities bill, the relaxation in the norms for establishing

private educational institutions, the call for greater involvement of the not-for-profit and voluntary organizations in educational activities are some of the harbingers of the developments to come.

Terms such as 'competition', 'customer', 'market', 'product'/'service' might be unusual for the educational sector and academic institutions but these could as well be used to describe the management and organization of such institutions. Several of the developments in management were initially intended for use in the manufacturing sector. But progressively these have been applied either directly or with some modi-

fications to other sectors. Over the years, there has been a significant diffusion of the concepts, principles, methods, and techniques applied in business and industry to other sectors of the society. Public utilities and services have been the major beneficiaries of the developments in the science of management.

Benchmarking has been extensively used in industry. Companies have used the technique to learn about the best practices and to imbibe them into their own systems and processes. But the benefits of benchmarking can be realized by any type of organization. There are innumerable cases where benchmarking has been used in the services and public utilities such as postal services, health care, transportation and the like.

What is Benchmarking ?

There is nothing exotic, secretive, or intriguing about benchmarking. Essentially, it is a simple idea and may be as old as human history. A child does benchmarking every moment of its life. We may call it copying or mimicry. In reality, it is benchmarking.

A child sees a person behaving in a particular way and decides to copy that person's actions. Children, being keen observers, are able to emulate actions, gestures and voice. The more creative a child the more expertly it is able to mimic others. What happens in mimicry is that a child copies the other's actions. Then it observes

how its own actions correspond to the actions of the person being imitated. The greater the similarity, the better the mimicry. When the child tries to copy the best actions of others we could think of it as benchmarking. So when a child tries to copy the voice of the best singer in the class, or tries to draw a figure as expertly as the consummate artist in its group, or tries to hit the ball like the first-rate cricketer in the team the child is trying to benchmark. So at the heart of human development lies the core idea of benchmarking.

Benchmarking : Its Origin and Meaning

The term 'benchmark' could have come from its use in geographical surveying where it is used as a topological reference point in the terrain; or from the cloth stores which often have a ruler sunk into the counter to measure the length of the fabric; or from the fishing contests where the fish is kept on a bench and its length measured by making a mark with a knife to compare who caught the biggest fish. So, essentially, a benchmark is a reference point for taking measures against.

The American Productivity and Quality Centre (APQC) gives a very interesting definition of the term 'benchmarking'. It says that "benchmarking is the practice of being humble enough to admit that someone else is better at something, and being wise enough to learn how to match and even surpass them at it". (APQC, 1993)

Benefits of Benchmarking

Several benefits could be realized by educational institutions by using benchmarking. The main benefits of benchmarking are

- It can help an institution understand and develop a critical attitude to its own processes;
- It promotes an active process of learning in the institution and motivates change and improvement,
- Through it an institution can look at other institutions and learn methods of improving its own existing processes and new ways of doing things; and
- Through it the institution can establish reference points for measuring performance of its processes.

Types of Benchmarking

When one thinks of benchmarking as a method of comparing against the best practice then three types could be identified *to see what* is to be compared.

- i. *Performance benchmarking* is to compare one's own performance with that of some other institution for the purpose of determining how good one's own institution is. So when a school benchmarks its admission procedure with that of another school it comes to know how effective or ineffective its own admission procedure is
- ii. *Process benchmarking* is to compare the methods and practices for performing processes for the purpose of learning

from the best to improve one's own processes. If a school is able to identify another school known for its effective processes, say in recruitment and selection of teachers, then it can improve its own process for recruitment and selection of teachers.

- iii. *Strategic benchmarking* is to compare the long-term, significant decisions and actions undertaken by other institutions to achieve their objectives for the purpose of improving one's own decision making processes. When a school is able to identify another school which has been able to establish a reputation for its vision, mission, long-term objectives, and innovative policy making then it can learn to do so likewise. To quote a specific example, it can be seen whether a school welcomes grants from the State or Central Government or not. If it does not probably to avoid undue interference from the government agencies—and has even then managed to raise resources through donations and fee then it could be quite instructive to find out how that school has been able to do so.

When one thinks of benchmarking as a method of comparing against the best practice then four types could be identified *to see against whom* the comparison is to be made.

1. *Internal benchmarking* is comparison between units or departments of the same institution. This is the first level of benchmarking and possibly the

easiest. It might involve a school finding out how discipline is maintained in one class and not in another. Then to learn to apply the methods and processes adopted in the former class to maintain discipline in other classes too.

- ii. *Competitive benchmarking* is direct comparison of own performance against the best competitor institutions. This sort of benchmarking is based on tangible measures. Schools often compete on the basis of results achieved by their students in the public examinations. The number of distinctions attained by the students of a successful school can serve as a competitive benchmark for other aspiring institutions.
- iii. *Functional benchmarking* is comparison of processes or functions against non-competitor institutions within the same sector or technological area. Here the academic institutions can look to other comparable institutions to see how certain processes work there. For instance, a school could learn to manage its own library from how the library is maintained in a research institution or a university.

Generic benchmarking is comparison of own processes against the best practices anywhere in any type of institution. This is an innovative type of benchmarking and if used properly could yield interesting results. An academic institution has several processes which are similar to those used by

other types of institutions. Aspects such as personnel management, finance and accounting, public relations, management of computer centre, etc. are activities which are performed in different types of institutions. An academic institution, for example, can gainfully learn how financial statements are prepared and money management done in companies or how the management functions of planning, organizing leadership, communication, and motivation are performed in industry and then adapt these to their own organization.

The Process of Benchmarking

A simple outline of the process of benchmarking consists of five phases. These phases and their brief explanation are given below. While explaining the phases the illustration of a school that is interested in improving a routine but specific process of organizing its morning assembly is given. This is done to make the explanation easily understandable and relevant to the subject matter of this article.

1. *Planning*

The first phase deals with laying the foundations for the benchmarking application to take place. There are some activities to be undertaken in planning. They are: selecting the process to be benchmarked; forming benchmarking teams; understanding and documenting the process to be benchmarked; and establishing performance measures for the process. It is critical

for an academic institution to identify clearly what its different processes are and in what sequence these processes operate. Then the activities mentioned above could be applied systematically. Suppose a school wishes to improve its process of organizing the morning assembly, it could form a team of teachers which would be the benchmarking team for morning assembly. It would also need to identify the performance measures in this case. For instance, it could decide that the time taken, number of items covered, and the number of functions performed in the morning assembly could be the performance measures.

2. *Searching*

This involves searching and identifying suitable benchmarking partners. Identifying successful academic institutions is a task that has to be done carefully. It is not only the public perception of an institution that is important but also how that institution is actually able to deliver service to the community. There are well-known schools and colleges everywhere. Sometimes the media also carries surveys and information that could form the basis for deciding the benchmarking partners. Here the school that conducts its morning assembly most impressively and effectively could be identified.

3. *Observing*

This phase requires studying the benchmarking partners to understand their processes. The academic institution's benchmarking team has to visit the part-

ners' institutions and observe at close quarters how the process to be benchmarked is working. For instance, a team could be deputed to observe how the assembly is organized in the morning for the school children. They can be asked to discuss and present their findings on their observations.

4. *Analyzing*

In this phase, the gap in performance levels between own and partner's process is identified so that the root causes of the gap, i.e. the methods and processes of the partners to achieve higher performance levels, could be identified. Here the school's benchmarking team has to analyze its findings and note in what ways the morning assembly process is managed better in terms of the performance measures identified. For example, the time taken in own school is 30 minutes while the benchmarking partner takes just 15 minutes. Or the number of items covered by own school is only four to six on a daily average while the partner is able to effectively cover eight to ten items in half the time. The gaps in the performance measures will point out what is actually wrong. Questions such as, Is the preparation for the assembly not done sufficiently in advance? Is there delay in the Principal coming to the assembly from her office? Is the way in which the students in different classes are asked to assemble not correct? and so on, can provide the starting point of identifying what is actually wrong and steps could be suggested to rectify the situation.

5. *Adapting*

The findings of the analysis done in the previous phase are utilized here by adapting the best practices identified to one's own conditions. Blind imitation is certainly not the purpose of benchmarking. Each situation is unique. One cannot fit a square peg in a round hole. The school trying to better its morning assembly process needs to understand that it cannot simply replace its own process with that of its benchmarking partner. There are differences in the situation which need to be taken care of. For instance, the location of own school might be a factor that is different. A school located in a busy city area would be able to find less space for the morning assembly and would have to innovate the use of space itself. A school in a suburb could find more space and therefore would not be unduly worried about how the space utilization is done in the morning assembly.

It must be remembered that benchmarking is not a one-time process. It should be done continually if one is to reap its benefits. Benchmarking done only once soon renders the existing practices second-best. This is because improvement is a never-ending process. The aim of benchmarking is continuous improvement.

What Benchmarking Is Not

Having seen what benchmarking is let us also note what it is not.

Benchmarking is not

- an imitating exercise that enables an institution to just copy what others are doing;

- a package that can be bought off-the-shelf;
- a one-time event in the institution's history;
- a technique that produces results overnight;
- a number game that can help the institutions;
- a trick to outwit the competitors;
- a panacea for all institutional ills.

Some Critical Issues in Benchmarking

Benchmarking is certainly not only about technique alone. It operates in the backdrop of a wide canvas. There are several critical issues to take note of. Some of these are

- Benchmarking is one of the several techniques available under the system of Total Quality Management (TQM). Some other techniques in the TQM family are the quality circles, business process re-engineering, customer focus, etc. Basically benchmarking is just a tool for continuous improvement.
- It is essential to start with communicating the need and benefit of benchmarking so that commitment of the people who will use the technique is secured. People can be convinced easily once they are told that improvement based on internal standards alone cannot suffice. They have to look outside to judge whether they are really doing the right things rather than just

doing the things right. A school embarking on a benchmarking exercise is almost certain to face resistance from its staff and students. This is natural since change is generally perceived to be threatening. There is a need for the school management to take its members into confidence, address their apprehensions, communicate the possible benefits to them, and the results expected of them.

- The focus of any benchmarking exercise has to be on the user of the institution's services. Such an exercise should yield tangible benefits for the user. The customer of an academic institution is the student. It is, therefore, essential that all benchmarking exercises have to be student-centred, i.e. should yield tangible benefits for the students.
- The domain of benchmarking is not only the methods and processes in an institution though the technique works only in these areas. The domain extends to cover a large area including higher-level concerns such as the strategies employed, human relations, institutional culture, etc.
- Benchmarking is a costly affair. Undertaking all the steps in the process of benchmarking involves spending a lot of money. The benefits of benchmarking should, therefore, be able to sustain financially the cost of conducting the benchmarking itself.
- Benchmarking should not turn out to be a mechanical exercise. It should not stifle the natural urge in people for creativity and innovation. Rather, it should be able to encourage people to be more creative in their work. Benchmarking applied to an academic institution should not result in students who are more concerned with the mechanical aspects of learning, or teachers who are required to apply the new methods and processes without being aware of their benefits but should be able to create more opportunities where the students and staff themselves would be able to suggest innovative ways to work. The technique of quality circles too works on the same principle.
- In the short term, benchmarking could seem to be a means to catch up with the best institutions in a particular area. But in the longer run the purpose is to achieve superior performance.
- All in all, benchmarking is a tool that could be usefully and meaningfully applied either proactively or reactively. There is no reason to wait for a crisis before considering benchmarking. It is certainly a catalyst for organizational learning to take place. Institutions that seek out and study the best practices experience the beneficial effect of good ideas and creativity that spring from a reservoir far beyond the boundaries of any one organization.

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A Study of Different Dimensions of Creativity in Relation to Locality of Scheduled Caste and Non-Scheduled Caste Students

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The effect of environment on the creative thinking of students, has been a topic of research for quite some time. Results have, however, remained inconclusive. The present investigation is an attempt to explore the relationship between creativity and locality of Scheduled Caste (SC) and non Scheduled Caste students. The study revealed that SC students belonging to the urban locality have been found significantly superior to their rural counterparts in all the dimensions of verbal and figural (except originality) creativity. In originality of figural creativity also, the mean score of the urban group was slightly higher than that of the rural group. Among non-Scheduled Caste students also the urban group maintained its significant superiority to the rural group in all dimensions of verbal creativity (except originality) and figural creativity. This shows that the creative thinking of students is significantly influenced by the environment.

MAN IS NOT content with the world that he has been given from his primitive days, says the Indian poet, Rabindranath Tagore. He has been busy creating a world of his own resources from the raw materials that lie around him. It is this unique inborn urge to create that sets man above animals, and launches him on his greatest adventures. This precious quality of man, his uniqueness, described by Martin Buber, as essential to saving man from the 'danger of

collectivism' is also men's most important contribution to society.

Creativity has been recognized as a precious source of emergence, development and survival of man's culture through the ages. The functioning of the mind and human nature have been the centre of attention of psychologists and educationists for centuries. It is only lately, with the rapid developments in science and technology, that creativity and its study has

become important. It is now realized that any system of education in a society should encourage creativity so that a society can be saved from stagnation and the individual can also have his own fulfilment.

A review of literature for studies on creativity shows clearly that very few studies have considered the relationship between social class and creativity. Creativity can best be studied by examining the social and cultural factors contributing to creative production. There are sufficient reasons to believe that a creative personality is a subjective aspect of culture (e.g. Torrance, 1969), while Hessel (1951) and Maddi (1965) believed that creativity existed independently of socio-cultural environment.

In Indian society Scheduled Caste students suffer from a cultural and socio-economic deprivation which does not attune them to the demands and opportunities of modern life. Further, urban and rural societies have almost entirely different cultures. Determinants of personality in an urban and rural society are also different. Therefore, it seemed relevant to explore the rural-urban difference in relation to creativity in Scheduled Caste and non-Scheduled Caste students.

Almost no study of a similar nature has been reported. However, superiority of rural children over their urban counterparts had been shown in a few investigations (Torrance, 1960 and 1962, Sharma, 1974 and Azami 1974). On the other hand studies conducted by Passi (1971), Singh

(1977), Srivastava (1978) and Singh (1979) reported the superiority of urban students over rural students in creativity.

Objectives

The following are the specific objectives of the present study

- to find out the difference in verbal creativity of rural and urban Scheduled Caste students,
- to find out the difference in figural creativity of rural and urban Scheduled Caste students;
- to find out the difference in verbal creativity of rural and urban non-Scheduled Caste students;
- to find out the difference in figural creativity of rural and urban non-Scheduled Caste students.

Hypotheses

- There is no significant difference in verbal creativity of rural and urban Scheduled Caste students
- There is no significant difference in figural creativity of rural and urban Scheduled Caste students.
- There is no significant difference in verbal creativity of rural and urban and non-Scheduled Caste students.
- There is no significant difference in figural creativity of rural and urban non-Scheduled Caste students

Procedure

The present study was conducted on 607 (160 Scheduled Caste and 447 non-Scheduled Caste) students of intermediate classes, both rural and urban, of Rohilkhand Region. Both the Verbal and non-verbal forms of the Torrance Tests of Creative Thinking were administered to the subjects. The verbal form consisted of product improvement test and unusual uses; the non-verbal tests comprised picture completion test and circles test. The tests were scored for the following variables: fluency (number of relevant responses), flexibility (variety of categories of responses) and originality (statistical infrequency of the responses in the culture, relevance and creative strength of the responses). A total creativity score for both the tests were also derived by summing all the sub-total scores.

Torrance Test of Creative Thinking (TTCT) inter-score reliability, reported by Pathak (1962) based upon .32 protocols, scored by two experienced scorers ranged

from 0.32 to 0.94. Raina (1969) also found encouraging reliabilities for the figural form on the first year college students of the Regional College of Education, Ajmer. Several validity studies involving children have been reported and are summarized in the norms-technical manual for the tests (Torrance, 1969).

Analysis and Results

Hypothesis I

This hypothesis aimed at testing if there was any significant difference in verbal creativity and its components, namely, fluency, flexibility and originality, between rural and urban Scheduled Caste students. Means and standard errors for fluency, flexibility, originality and total verbal creativity were computed separately. In order to test whether there was any significant difference in different components of creativity between rural and urban groups of the students, t-test of significance was applied (Table 1).

TABLE 1
Mean, Standard Errors and t-Values on Verbal Form of Torrance Tests of Creative Thinking
of Rural and Urban Scheduled Caste Students

Scores	N=116 Rural		N=44 Urban		t-value
	Mean	SE	Mean	SE	
Fluency	15.7672	0.5083	17.7045	0.7895	3.0661**
Flexibility	11.0862	0.4478	13.7955	0.6588	3.2531**
Originality	5.4914	0.3844	7.0909	0.5723	2.3979*
Total	32.3707	1.2074	39.5909	1.7986	3.2058**

* $p < 0.05$ ** $p < 0.01$

Table 1 reveals that differences between the two groups are significant at 0.01 level for fluency, flexibility and total verbal creativity (t-values for fluency 3.0661, flexibility 3.2531 and total verbal creativity 3.2058) and at 0.05 level of significance for verbal originality (t-value - 2.3979). The mean scores for all dimensions of creativity of urban students are higher than that of rural students implying that urban students of Scheduled Castes are more verbally creative than rural students. Thus, locality is found to be related to verbal creativity of students.

Hypothesis 2

This hypothesis aimed at bringing out the difference in figural creativity and its components, namely fluency, flexibility and originality, between the rural and urban Scheduled Caste students. To test this hypothesis, means and standard errors of fluency, flexibility originality and total figural creativity were computed for the rural and urban students of Scheduled Castes and the t-test of significance was applied. The results are presented in Table 2.

It is obvious that there is a significant difference ($p < 0.01$) in fluency, flexibility and total figural creativity scores (t-values for fluency 3.3612, flexibility 3.7343 and total figural creativity 2.7725). In the dimension of originality the t-value of 0.6661 is not significant at five per cent level. However, the fact that the overall differences in all the dimensions are in favour of urban students should be noted. Thus, it is clear that urban Scheduled Caste students are superior to their rural counterparts in figural creativity.

Hypothesis 3

This hypothesis aimed at testing if there was any significant difference in verbal creativity and its three components, namely fluency, flexibility and originality, between the rural and urban non-Scheduled Caste students. To test this hypothesis the means and their standard error for all the dimensions of verbal creativity for both the groups were calculated and the t-test of significance was applied. The results are presented in Table 3.

TABLE 2
Means, Standard Errors and t-Values on Figural Form of Torrance Tests of Creative Thinking
of Rural and Urban Scheduled Caste Students

Scores	N=116 Rural		N=44 Urban		t value
	Mean	SE	Mean	SE	
Fluency	16.9188	0.5605	20.5000	0.9042	3.3612**
Flexibility	12.1379	0.4543	15.4773	0.8196	3.7374**
Originality	30.7241	1.0644	32.0909	1.7970	0.6661
Total	50.7759	1.6083	68.5227	2.8771	2.7725**

TABLE 3

Means, Standard Errors and t-Values on Verbal Form of Torrance Tests of Creative Thinking of Rural and Urban Non-Scheduled Caste Students

Scores	N=270 Rural		N=177 Urban		t-value
	Mean	SE	Mean	SE	
Fluency	15.8111	0.3576	17.8023	0.4176	3.5788**
Flexibility	11.7363	0.3109	13.0565	0.3535	2.7763**
Originality	5.522	0.1983	5.8531	0.2658	1.0149
Total	32.6926	0.7903	36.7232	0.9272	3.2731**

Table 3 reveals that the urban group is significantly superior to the rural group in fluency, flexibility and total verbal creativity (t-values for fluency, flexibility and total creativity scores are 3.5788, 2.7763 and 3.2731 respectively). In originality dimension rural and urban group do not differ significantly but the mean score of the urban group is higher than that of the rural group. In this way the rural group fails to establish its superiority over the urban group in all the dimensions of verbal creativity.

Hypothesis 4

This hypothesis aims to know whether there was any significant difference in figural creativity between the rural and urban students of non-Scheduled Castes. The means and their standard error were also computed for both the groups. In order to test whether there was any significant difference in the students' figural creativity between these two groups, the students' t-test of significance was calculated (Table 4).

TABLE 4

Means, Standard Errors and t-Values on Figural Form of Torrance Tests of Creative Thinking of Rural and Urban Non-Scheduled Caste Students

Scores	N=270 Rural		N=177 Urban		t-value
	Mean	SE	Mean	SE	
Fluency	17.4667	0.3895	18.8249	0.4924	2.1739 [†]
Flexibility	12.5370	0.3242	14.5198	0.4142	3.8076**
Originality	30.4037	0.7682	33.3729	0.9992	2.3814 [†]
Total	60.4259	1.2201	66.7062	1.6356	3.1307**

It is revealed from Table 4 that the difference between the two groups is highly significant ($p < 0.01$) for figural flexibility and total creativity score (t-value for flexibility 3.8076 and for total creativity scores 3.1307) and significant ($p < 0.05$) for fluency and originality dimensions of figural creativity (t-value 2.1739 for fluency and 2.3814 for originality). Thus, the mean scores of the urban group of non-scheduled Castes for all the dimensions of figural creativity are significantly higher than for the corresponding rural group. Again, the urban group shows superiority to the rural group in figural creativity also.

The present study has shown that the creative thinking of students is significantly influenced by the environment. Therefore, it is relevant to see the role of the schools where children spend most of their time in the development of creative thinking. Among Scheduled Caste students the urban

group is significantly superior to the rural group in all dimensions of verbal and figural (except originality) creativity. In the same fashion the urban group for non-Scheduled Caste students was also superior to the rural group of the same caste in verbal (except originality) and figural creativity.

Thus, the overall superiority of the urban group over the rural group in creativity among Scheduled Caste and non-Scheduled Caste students supports the studies conducted by Passi (1971), Singh (1977), Singh (1978), Srivastava (1977), Singh (1979) and Shukla (1982). There is evidence to show that highly creative children are likely to be adventurous, unorthodox, humorous, unwilling to accept authority and likely to ask awkward questions. These traits are promoted more in an urban background than in a rural background.

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